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**ENGLISH TRANSLATION OF  
ANNEXES TO INTERNATIONAL  
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REPORT  
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VERIFICATION OF TRANSLATION

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Declare as follows:

1. That I am well acquainted with both the English and German languages, and
2. That the attached document is a true and correct translation made by me to the best of my knowledge and belief of:
  - a) amended pages filed in respect of Patent Specification PCT/DE03/01823

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drive side, without the efficiency of the drive hereby being adversely affected by too much. However the known arrangement has the drawback that owing to the ability of the locking element to move in the axial direction in order to produce and clear the self locking action it requires a certain extension in the axial direction. This goes against the desire, particularly in the case of flat motors, of obtaining the smallest possible extension of a motor in the axial direction which for reasons of space is of great importance in electric drives for motor vehicles .

From WO 94 23220 A a drive is known consisting of a drive motor, a drive element mounted rotatable about a drive axis and a device for the self-locking of the drive element. In the de-energised state of the drive motor the drive element is locked with a locking element. The locking element can be brought out of engagement with the drive element in the radial direction relative to the drive axis for operating the drive motor.

In DE 199 43 692 A1 a disc rotor motor is described, more particularly for adjuster devices in motor vehicles. No device is given for the self locking of the drive element.

From FR 2 405 586 A a rotating electro-mechanical drive is known in which in the de-energised state of the drive motor a locking element is fixed through magnetic forces of a permanent magnet.

The object of the invention is therefore to provide the simplest possible self-locking design of a motorised drive for an adjuster device.

This is achieved according to the invention by providing a drive with the features of patent claim 1.

According to this the locking element for operating the drive motor can be brought out of engagement with the drive element in the radial direction relative to the drive axis in order to permit movement of the drive element during energising of the associated drive motor. The locking element is in the de-energised state of the drive motor fixed

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by magnetic forces which are generated by the stator of the drive motor in a position which locks the drive element.

Bringing the locking element out of engagement can on the one hand take place when energising the drive motor, e.g. by using the electric current which is used to energise the drive motor at the same time to actuate the locking element, possibly by means of an electromagnet. On the other hand it can also be provided that the locking of the drive element is cleared prior to energising the motor so that at the start of operating the motor the locking element is in each case out of engagement with the drive element. This type of timed control of lifting the locking element from the drive element can be particularly advantageous if the locking element is in positive engagement with the drive element.

Conversely the locking element on switching off the drive can be moved radially into engagement again with the drive element so that a rotational movement of the drive element about its drive axis is locked and the transfer of forces applied on the output side to the drive side is prevented (self-locking). This engagement process can be controlled so that there is no sudden engagement but a controlled measured engagement, e.g. to prevent noises.

The solution according to the invention has the advantage that it enables a self locking action which on the one hand does not impair the efficiency of the drive and which on the other hand requires no special extension of the drive motor in the axial direction.

The solution according to the invention is therefore particularly suitable for use in the case of flat motors which have for example a rotor in the form of a disc rotor wherein the locking element during energising of the flat motor is lifted in the radial direction from the drive element so that the forces generated by the flat motor lead to a rotational movement of the drive element. When using the solution according to the invention for a flat motor having a disc rotor (disc rotor motor) in which the locking element can be brought in and out of engagement radially with the rotor (armature disc), it enables the large friction radius of the armature disc to guarantee a sufficient self locking action with comparatively small braking forces. The permanent magnetic energy which is constantly available locks the armature disc when the motor is not energised, that is on applying a force on the output side, e.g. on a window pane which is to be adjusted through the drive or on a seat part which is to be adjusted through the drive. The self locking action is hereby not generated in the first instance through the gear configuration but is obtained through a permanent magnetic brake which manages without any additional energy source.

In order to bring the locking element out of engagement with the drive element when the drive motor is energised, according to a variation of the invention an elastic element can be used which is coupled to the drive motor in the suitable way so that during energising of the drive motor the locking of the drive element can be lifted.

In a particularly preferred variation of the invention the locking element can be brought electrically out of engagement with the drive element.

In one variation of the invention the magnetic forces can be generated for example through a permanent magnet which forms the stator of the drive motor.

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Thus a permanent magnet which is in any case provided as a stator in the motor can hereby be used to generate the brake force with which the drive

Very similar conditions to those described above regarding the magnetic field displacement exist with the so-called magnetic field deflection. Here a switch (magnetic switch) is electrically actuated and the magnetic field is hereby deflected through a second flux path.

Furthermore the arrangement according to Figures 1 to 3 also meets the requirements for a construction with hybrid magnets with two stable end positions which can be occupied in the de-energised state. The activation and deactivation of the brake takes place for example through a short current impulse according to the flip-flop principle.

The brake device 3, 4, 5 illustrated in Figures 1 to 3 for a disc rotor motor 1, 2 has the advantage that on the one hand it causes in the de-energised state a reliable self-locking of the drive without influencing the efficiency in the operation of the motor and that on the other hand it does not influence the extension of the flat motor 1, 2 in the axial direction, thus along the drive axis A.

1. Drive for an adjuster device in a motor vehicle with
  - a drive motor (1, 2) with a stator (2)
  - a drive element (1) mounted rotatable about a drive axis (A) and
  - a device for the self-locking of the drive element (1) which in the de-energised state of the drive motor (1, 2) locks the drive element (1) with a locking element (3)

**characterised in that**

the locking element (3) for operating the drive motor (1, 2) can be brought out of engagement with the drive element (1) in the radial direction (R) relative to the drive axis (A) and that the locking element (3) in the de-energised state of the drive motor (1, 2) is fixed by magnetic forces which are generated through the stator (2) of the drive motor (1, 2) in a position which locks the drive element..

2. Drive according to claim 1 **characterised in that** the locking element (3) is lifted in the radial direction (R) from the drive element (1).



3. Drive according to claim 1 or 2 **characterised in that** the drive element (1) is formed by a rotor of the drive motor (1, 2).
4. Drive according to claim 3 **characterised in that** the drive element (1) is formed as a disc rotor.
5. Drive according to one of claims 1 to 4 **characterised in that** the locking element (3) can be brought out of engagement with the drive element (1) by means of an elastic element.
6. Drive according to one of claims 1 to 4 **characterised in that** the locking element (3) can be brought electrically out of engagement with the drive element (1).
7. Drive according to one of the preceding claims **characterised in that** the magnetic forces are generated by a permanent magnet (21, 22).
8. Drive according to one of the preceding claims **characterised in that** the locking element (3) has a first magnetic section (31).

9. Drive according to claim 8 **characterised in that** through magnetising the first magnetic section (31) the locking element (3) can be fixed in a position which locks the drive element (1).
10. Drive according to claim 9 **characterised in that** the first magnetic section (31) defines a first magnetic path for magnetic flux (F).
11. Drive according to one of claims 1 to 7 and one of claims 8 to 10 **characterised in that** in the first magnetic section (31) runs a magnetic flux (F) through which the locking element (3) can be fixed in a position locking the drive element (1).
12. Drive according to one of the preceding claims **characterised in that** the locking element (3) can be brought out of engagement with the drive element (1) by energising an electromagnet (5).
13. Drive according to claim 12 **characterised in that** the electromagnet (5) is energised at the same time as the drive motor (1,2).
14. Drive according to claim 11 or 12 **characterised in that** the electromagnet (5) generates a magnetic field through which the locking element (3) is brought out of engagement with the drive element (1).

15. Drive according to claim 11 and 14 **characterised in that** the magnetic field generated through the electromagnet (5) diverts the magnetic flux so that the resulting magnetic flux (F) brings the locking element (3) out of engagement with the drive element (1).
16. Drive according to claim 11 and 14 **characterised in that** the magnetic field generated by the electromagnet (5) displaces the magnetic flux so that the resulting magnetic flux (F) brings the locking element (3) out of engagement with the drive element (1).
17. Drive according to claim 14 or 15 **characterised in that** the resulting magnetic flux (F) runs in a side path of a second magnetic section (32) of the locking element.
18. Drive according to claim 7 and one of claims 12 to 14 **characterised in that** the permanent magnet (3) and the electromagnet (5) are integrated in a hybrid magnetic circuit so that the permanent magnetic flux superimposes the electromagnetic flux and the locking element (3) can hereby occupy two stable positions wherein in the one stable position the drive element (1) is locked by the locking element (3) and in the other stable position the locking element (3) is out of engagement with the drive element (1).
19. Drive according to claim 18 **characterised in that** the electromagnet (5) is each time de-energised in both stable positions of the locking element (3).
20. Drive according to claim 18 or 19 **characterised in that** the transition from one stable position into the other stable position can be triggered by energising the electromagnet (5) with a current impulse.

21. Drive according to one of the preceding claims **characterised in that** the locking element (3) has a brake element (30) which in order to lock the drive element (1) acts on same.
22. Drive according to claim 21 **characterised in that** the brake element (30) acts with friction on the drive element (1).
23. Drive according to one of the preceding claims **characterised in that** the locking element (3) is guided movable in the radial direction (R) on a guide device (4).
24. Drive according to one of the preceding claims **characterised in that** the locking element (3) is displaceable in the radial direction (R).